Two cultures? Working with moral dilemmas in environmental science

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Martin Reynolds [a] *, Chris Blackmore [b]

[a, b] The Open University, Milton Keynes, MK7 6AA, UK

Abstract

Grappling with ethical issues in environmental studies is notoriously challenging, particularly for those working in the scientific/technical domain. The divide between humanities and science was famously expressed in terms of two cultures by C.P.Snow in his 1959 critique of the prevailing dismissive attitude towards science within Government. An ensuing rebuke to Snow in the 1960s suggested that it was scientists that worked in a moral vacuum. Calls for more responsible science have since become even more urgent with increasing environmental risks. The paper describes a simple adaptable heuristic for professionals coming from a more scientific background to work with ethical issues of environmental responsibility. The heuristic, arising from over fifteen years of experience in teaching environmental ethics to mature part-time study fellows at The Open University mostly from a technical professional background, provides a practical means of bridging the divide between science and humanities. Three recurring and interrelated questions of responsibility are addressed – (i) what matters, in terms of *issues*, (ii) who matters (and how), in terms of *agency*, and (iii) why some matters and issues of agency are prioritised over others, in terms of *justification*. The heuristic can be adapted for dealing with moral issues of responsibility where caring for the environment whilst demonstrating accountability are regarded as important for developing professional and/or personal capacity. Some of the challenges that remain in using such a device for bridging the cultural divide are discussed.

Keywords: C.P.Snow; two cultures; environmental responsibility heuristic; ethics; caring; accountability.

1. Introduction

The gap between science and humanities was famously expressed by C.P.Snow in his 1959 Cambridge University Rede Lecture "The Two Cultures and the Scientific Revolution" (Snow, 1960). Snow was critical of the prevailing dismissive attitude towards science within Government. In 1962 the literary critic F.R. Leavis provided a famous rebuke to Snow suggesting that it was scientists that worked in a moral vacuum. In a series of essays to mark the 50th anniversary of Snow's lecture Robert Whelan commented:

> "Snow was right to criticise the supercilious dismissal of science as not fit for gentlemen: scientific understanding can be both beautiful and vital for our culture. Leavis was right to call attention to the need for science to operate within the framework of moral values that a humane education can

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* Address for correspondence: Dr Martin Reynolds, The Open University, Faculty of Maths, Science and Technology, Walton Hall, Milton Keynes, MK7 6AA, UK *E-mail address*: martin.reynolds@open.ac.uk / Tel.: +44 (0) 1908 654894

generate: the fact that science permits us to do certain things doesn't mean that we should."(Whelan, 2009)

Since Snow's lecture scientists have confronted ethical dilemmas in domains ranging from biomedical research to atomic energy and agrichemicals, and there has been active discourse concerning science and ethics (for evidence of the range of reports and academic journals associated with such discourse see, for example, Nisbet & Scheufele, 2009). Science-based communities engaged in Science and Technology Studies and Citizen Science have in particular worked with a range of different value positions (cf. Jasanoff, 2008). Meanwhile environmental science has progressed significantly with many more scientists taking up key advisory positions in environmental decision making; for example from the institutionalisation of environmental impact assessments (EIAs) in the 1960s through to more recent corporate responsibility reporting and reporting from the Intergovernmental Panel on Climate Change (IPCC). In the 1970s environmental ethics emerged as a recognised discipline within the wider humanities curriculum. However, the two professional communities – environmental scientists and environmental ethicists – and their disciplinary traditions have arguably remained largely disparate with little interaction.

In 1997 the Technology Faculty at The Open University (OU) introduced a postgraduate module on Environmental Ethics (OU module code T861). The OU distance learning module was an adaptation of a conventional face-to-face module developed originally at Lancaster University in collaboration with Wye College. In the ensuing 10 years, modifications were made to the content in order to make the subject matter more accessible for the majority of OU registered science and technology-based study fellows wishing to become more familiar with the ethical issues of environmental practice. An inter-Faculty workshop was organised in 2007 to draw on the experiences of those working on the module with colleagues outside the Technology Faculty (including Social Sciences and the Arts Faculties) in order to explore the development of a replacement module. In 2009, the OU launched TD866 – *Environmental Responsibility: ethics, policy and action*, which developed further some of the ideas of T861 and a Social Sciences module also coming to the end of it life - D830 Ecology, Justice and Citizenship. In time TD866 replaced both these earlier modules.

Since 2009 nearly 400 study fellows have successfully undertaken TD866. The gender profile has remained balanced (49% male). 58% come from 30-49 age range. Whilst most choose the module as one of many postgraduate 30-credit options to gain a qualification (e.g., a Diploma or Masters in, for example, Environmental Management, Development Management, Systems Thinking in Practice), around 15% have taken the module as a one-off 6-month part-time study. Despite current austerity and uncertainty in higher education provision, there appears to remain a significant demand for getting to grips with ethical issues in environmental studies, mostly in order to enhance professional practice.

At the core of the TD866 module is a heuristic, specially developed by the module team for teaching environmental responsibility. This paper introduces the heuristic, briefly describing what it is and how it is used to structure the teaching of moral issues within environmental studies. We also provide a brief exploration of some implications and challenges in adapting the heuristic for wider professional use amongst scientists and technicians.

2. Environmental responsibility heuristic for teaching ethics

The environmental responsibility heuristic was devised as a core triadic structure which at its simplest was based upon three questions of environmental responsibility – what matters? who matters? and why some issues and agents seemingly matter more than others? (see Fig.1). The question 'who is responsible?' is often expressed as the first instinctive line of inquiry into the uncertainties regarding responsibility. However, this question assumes some prior awareness of *what* matters or *what* issues are at stake. Context clearly makes a difference. A viewpoint on 'what' matters, for example, may emphasise concern for economic well-being or for ecological well-being, depending on whether, say, it is that of an industrial labourer in the food industry making a living in an impoverished country of the global South, or that of a relatively more comfortable citizen from the global North often with choices and means of purchasing power who can afford more concern over the wider ecological consequences of importing cheap food.

Questions of what matters depend, therefore, on the perspective taken. It is only once some idea of what matters is established that it is possible to start questioning who matters and in what sense they matter. These questions in turn may prompt subsequent questions associated with *why* some issues are prioritised over others and *why* some ways of dealing with them are prioritised over others. Three questions of environmental responsibility can therefore be identified: firstly, the issues of environmental responsibility or *what matters*; secondly, the agency of responsibility or *who matters and in what sense*; and thirdly, the justification for responsibility – *why* some issues matter more than others and why some stakeholder roles matter more than others.

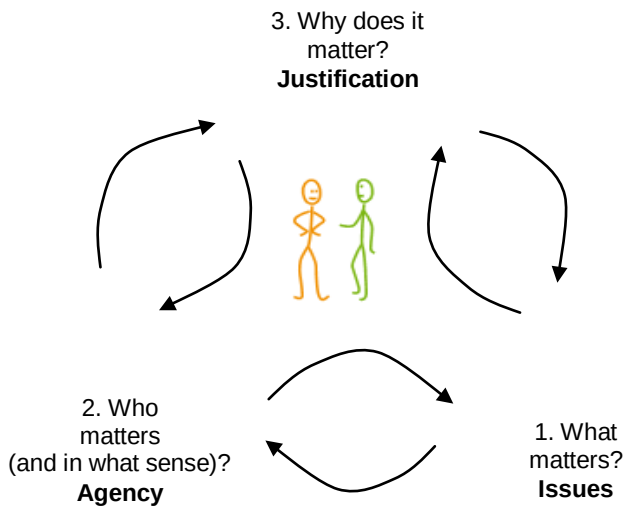

Figure 1 Simple expression of the environmental responsibility heuristic

Fig.1 illustrates the basic heuristic of environmental responsibility based on these three questions. The arrows between the three triadic points signal influences. In dealing with complex issues

associated with environmental responsibility, it is helpful to keep clarity between these questions and consider appropriate relationships between them. For example, if the issue of alternative sources of energy (such as solar energy, nuclear fuels, wind and tidal power) is of concern, it is helpful to appreciate who is concerned (oil companies, transport companies, government agencies, environmental groups, individuals as consumers and/or citizens, etc.). Asking simple questions regarding who is benefiting and who is not benefiting from these alternative fuel sources provides some clarity on why these issues are deemed important.

3. Two types of responsibility: (informal) Caring and (more formal) Accountability

From the outset of teaching about moral dilemmas we make clear our understanding of responsibility in terms of two complementary types of environmental action: first, **caring** for an environment comprising the natural world of life and life support, of which humans are an integral part; and second ensuring **accountability** for any harm or wrong done to the environment. Both types of environmental action address the three recurring and interrelated questions associated with the environmental responsibility heuristic. In so doing, the heuristic provides a means of making sense of some of the more obscure, abstract though vitally important terminology in moral philosophy including 'obligations', 'entitlements', 'duty', and 'rights'.

Here we make a distinction between the *informal* and *formal* aspects of being responsible, where obligations and entitlements represent the more informal aspects regarding our capacity to act, and duties and rights provide their more formalised codified expressions respectively. Duty and rights are formalised 'liabilities'; collective agreements that whilst acknowledging individual capacities to act on the environment, nevertheless provide restrictions to those actions. Obligations and entitlements are intuitive 'taken for granted' attributes which provide the less formal bedrock of cultural context for legitimising duties and rights in order for them to remain relatively stable and uncontested.

The informal and formal dimensions of environmental responsibility map roughly onto caring and accountability. The informal caring/formal accountability divide can also be used to make sense of the vast array of ethical traditions. Here we draw on the distinction between **normative** and **philosophical** ethical traditions (Des Jardins, 2001). Normative ethics deals with intuitive notions of what's good and what's right – representing the caring dimension of responsibility. Philosophical ethics represents the more formalised higher level of accountability in which normative judgements and their supporting reasons are analysed: it represents " the level of the general concepts, principles, and theories to which we appeal in defending and explaining normative claims" (*ibid* p.19).

At a generic level, the three points of the heuristic in Fig.1 can represent the notion of being environmentally responsible (item 3. Justification) in terms of informally caring about *issues* of environmental responsibility expressed through normative value judgements (item 1) and more formally accounting for harm and wrongdoing through our collective *agency* with the help of philosophically informed moral judgements (item 2). At a less generic level of application, the heuristic can be used to make more detailed sense of (informal) caring and (more formal) accountability respectively.

3.1 Caring for the environment: using informal normative value judgements

Normative ethics – 'what ought to be done' - invites attention to who and/or what we **value**. Whereas the boundaries of the moral community for which we express a collective care have been extended from human-interest to include animal welfare (Nash 1989), many now consider that our obligations extend beyond other animals to all living organisms, or ecosystems or even the biosphere as a whole.

In relation to environmental studies, value can be distinguished into 3 types (Reynolds, 2009 p.45):

1. "**Instrumental** value… [e.g.] putting monetary value on environmental 'goods', or considering nature in terms of natural 'resources', and ecosystem 'services'…
2. "**Intrinsic** value is value 'in itself' …or 'in its own right'…[i.e.] environmentalism as a social movement in the mid-twentieth century grew from an appreciation of intrinsic value of nature…
3. "**personal** (or individual)…internally held value of the valuer… Two perspectives on the environment based on personal values can be distinguished – *anthropocentric* [placing humans in a privileged position over nature], and *ecocentric* [regarding humans as simply one part of a moral community consisting of all living things and non-living natural objects]"

An individual's perspective and where they place their boundaries depend on the particular context in which they are expressing their personal values. In a situation where disease-causing organisms such as the malarial Plasmodium, and its main vector the Anopheles mosquito, are prevalent, we might be forgiven for having an anthropocentric perspective in trying to eliminate such life forms for the benefit of other humans. The circumstances determine what our values are and what perspective we might have. In issues relating to the environment, there are usually multiple values held by different people, which are often in conflict.

Caring for the environment requires attention to these different values. Each type corresponds respectively to the three triadic poles of the heuristic. Our concern for 'what matters' might be regarded as a basic and wider application of instrumental value. In practicing responsibility in a less formal sense, we may assume *entitlements* which provide us with capacities to act regarding these value judgements. Our concern for 'who matters and in what sense' might be seen as an extension of intrinsic value. Our informal *obligations* may correspondingly indicate that we are constrained by considering the effects of our activities on others (including non-human nature). Finally, our personal values signal the means by which we justify our value judgements (instrumental and intrinsic) and hence informally justify associated entitlements and obligations in any particular context of action or decision making.

3.2 Accountability and the environment: using formal philosophical ethics

Most people carry around a useful set of day-to-day rules that regulate behaviour towards the natural environment – for example, it is *bad* to pollute, it is *wrong* to endanger life. But often there is a need to go further. Pollution may be bad but does it mean that cooking food through burning fuel is bad? Or where it is wrong to endanger life, is it wrong to kill living things for food or to kill disease-causing organisms? When applying everyday normative notions of good and bad, right and wrong some basic insights from philosophical ethics can provide a means of structuring responses to such questions of environmental responsibility in a more informed manner. Philosophical ethics maps out

three theoretical traditions. The ethical traditions and associated three moral dilemmas relating to environmental responsibility can be summarised:

1 *Doing* what's good: this constitutes a *consequentialist ethic* that considers good and bad (harmful) to be drivers of ethical action. It is the consequences of an action that determine a response to the moral dilemma of whether it is right or wrong. Examples include theories of utilitarianism.

2 *Doing* what's right: this constitutes a *deontological ethic* that considers right and wrong to be independent of consequences. It focuses on the moral dilemma of duty – the rightness or wrongness of actions themselves – as opposed to the rightness or wrongness of the consequences of those actions. Examples include rights-based approaches and contract theory

3 *Being* responsible: this constitutes a *virtue ethic* that considers character formation to be a determining factor in addition to either calculations of consequence or the rightness or wrongness of the action itself. It focuses on the moral dilemma of character – virtue or vice (being virtuous or vicious). Examples here invite attention to ideas on environmental justice, deep environmentalism and deep ecology

The three traditions again map on to the heuristic. Consequentialist ethic is associated with 'what matters'; deontological ethics relate to 'who matters', and virtue-based ethics relate to questions of justification and why things matter.

4. Challenges

The environmental responsibility heuristic is a model – a human device. Like all devices generated by Homo sapiens we need to apply it with care and circumspection. As described above, the heuristic can be used either at a generic level (Fig.1) for appreciating the *relevance* between caring (cf. item 1 on Fig.1) and accountability (cf. item 2) for enacting environmental responsibility (cf. item 3). Or it can be used at a finer level of granularity to map out the *purposefulness* of either caring for the environment (different values informing entitlements and obligations) and/or demonstrating accountability (different ethical traditions informing issues of duty, rights, and/or virtues). Whichever level of granularity is being applied, it is important though not to lose sight of the relationship between the triadic points and engage with the arrows of influence and their composite emergent effect; the whole is more than the sum of its parts.

Figure 2 illustrates how we have used the heuristic introduced in Part 1 of the module to help navigate through Parts 2 to 4 of the module . Dividing the two moral dilemmas of informal caring (*doing* what's good) and more formal accountability (*doing* what's right) might also unnecessarily accentuate an unhelpful divide too much. A general challenge is to bridge these dimensions in focusing more on the overriding moral dilemma of *being* responsible – focussing on the arrows of influence rather than the triadic endpoints.

Two classic readings from Aldo Leopold (*A Land Ethic*, 1948), and Rachel Carson (*Silent Spring*, 1962) are used in the accompanying *The Environmental Responsibility Reader* (Reynolds et al., 2009) to exemplify the bridge between science and humanities and the significant influence of scientists on ethical debate. Both scientists, each with particularly astute moral insights, demonstrate the ease with which scientific thinking can contribute significantly to the transition from caring to accountability.

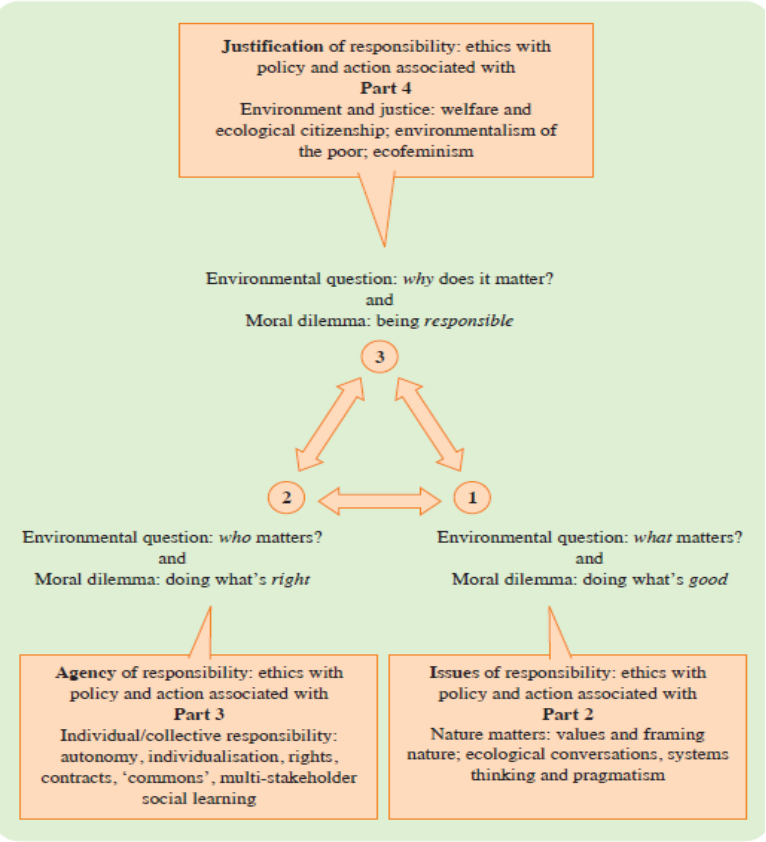

Figure 2 Environmental responsibility heuristic for guiding module
(from TD866 *Environmental Responsibility* Study Guide, Part 1 p.62)

The question is how to nurture similar capacities in our education system; a system typically segregated in Faculties accentuating disciplinary divides. Drawing on feedback from science-based study fellows regarding our teaching of moral philosophy, three recurring challenges exist. Firstly, given that time is an increasingly scarce resource, particularly for mature students working towards continual professional development, there is a risk of overloading any curriculum. The challenge is to allow space for study fellows to work with their own issues of *relevance*. In part we do this by allowing students to choose their own area of interest to work on as part of a project-based end-of-module assessment. Secondly, there are peculiar challenges in teaching moral philosophy for enabling *interactive discussions* and conversation along with supportive tutoring. Whilst face to face conversations are always preferable, online discussion forums and/or the use of virtual conferencing tools, both properly moderated, significantly enhances the learning experience. Thirdly, whilst issues of relevance may be engaged with, and appropriate platforms for conversation and deliberation provided, the experience of learning in moral philosophy for scientists and technologists invites study

fellows to move from their comfort zones. Adapting the model for different users at different levels of engagement with appropriate *language* is therefore important

5. Summary

> "At the heart of a liberal education is the notion that human beings are capable of moving from barbarism to civilisation by using their intellectual and moral capacities – and that is an idea which ought to unite scientists and literary intellectuals alike." (Whelan, 2009).

Using the environmental responsibility heuristic, a unity of action is defined in terms of two dimensions: (i) an informal sense of caring for environment, and (ii) a more formal sense of providing codified constraints and regulations for accountability. Less formal ideas of responsibility can be understood in terms of nurturing values and obligations, and reflecting on entitlements; whereas more formal aspects of environmental responsibility can be understood in terms of formulating 'rights' that may circumscribe entitlements, and 'duties' providing formal expression of obligations. The two dimensions of responsibility address three recurring and interrelated questions of responsibility: what matters, in terms of *issues*; who matters (and how), in terms of *agency*; and why some issues and stakeholders are prioritised over others, in terms of *justification*. The informal and formal dimensions of responsibility could be seen as being aligned with the normative and philosophical dimensions of ethics respectively, but in reality there is considerable overlap between the two. Three formal traditions of environmental ethics– consequentialist, deontological and virtue-based ethics – along with some other traditions associated with environmental philosophy may support improved understanding and practice, both in the informal and the formal dimensions of environmental responsibility.

In examining *what* issues are of importance, questions arise with respect to *who* are they important to and *why*. Raising these questions in a systematic manner can help to counter the often-expressed concerns of despair (at the multitude of issues at stake), apathy (how can I get to grips with such issues?) and cynicism (why bother?).

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